

In the claims:

- 1 1. A method for searching a peer-to-peer computer network comprising:
2 collecting data about a plurality of computers within the network, including a
3 network location of each of the plurality of computers;
4 selecting at least one computer to be a selected computer, based on the collected
5 data; and
6 routing search queries from a user to the selected computer.
- 1 2. The method of claim 1, wherein said collecting data about a plurality of computers
2 within the network further comprises:
3 sending a signal to at least one of the plurality of computers;
4 receiving the signal upon its return from the at least one computer; and
5 forming a profile characterizing the at least one computer, based on information
6 provided by the signal.
- 1 3. The method of claim 2, wherein the profile comprises a round trip time taken by
2 the signal during its travel to and from the at least one computer.
- 1 4. The method of claim 2, wherein the profile comprises information on the number
2 of files contained within the at least one computer.
- 1 5. The method of claim 2, wherein the profile comprises information on the amount
2 of content available to the network on the at least one computer.
- 1 6. The method of claim 2, wherein the profile comprises information on the capability
2 of the at least one computer to process a search query.
- 1 7. The method of claim 2, wherein the profile comprises information on the number
2 of connected computers encountered by the signal during its travel to and from the at least
3 one computer.

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1 8. The method of claim 2, wherein the profile comprises information on the number
2 of additional computers connected to the at least one computer.

1 9. The method of claim 1, wherein the profile comprises information on a frequency
2 with which the plurality of computers are connected to the network.

1 10. The method of claim 1, wherein the profile comprises information on which of the
2 plurality of computers are currently connected to the network.

1 11. The method of claim 1, wherein said collecting data about a plurality of computers
2 within the network further comprises:

3 collecting a plurality of statistical measures which characterize each of the plurality
4 of computers,

5 and wherein said selecting the selected computer based on the collected data
6 further comprises:

7 assigning a weighted score to each statistical measure for each of the plurality of
8 computers;

9 combining the weighted scores to obtain a rank for each of the plurality of
10 computers; and

11 ranking the plurality of computers according to the resulting ranks.

1 12. The method of claim 1, wherein said collecting data about a plurality of computers
2 within the network further comprises:

3 monitoring data exchanges which occur between the plurality of computers.

1 13. The method of claim 12, further comprising:

2 storing the collected data in a memory, wherein at least a portion of the collected
3 data is content data which comprises information on the content available for searching on
4 the plurality of computers.

1 14. The method of claim 13, further comprising:

2 removing the content data after a predetermined period of time;

3 sending common user search queries into the network on a periodic basis; and

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4 storing the results in the memory.

1 15. The method of claim 13, wherein said storing the content data in a memory
2 comprises:

3 choosing a portion of the content data to store based on previous user requests.

1 16. The method of claim 13, wherein said collecting data about a plurality of
2 computers within the network further comprises:

3 monitoring a current connectivity status of each of the plurality of computers,

4 and wherein said selecting at least one computer to be a selected computer based
5 on the collected data further comprises:

6 selecting the selected computer based on the content data and the current
7 connectivity status.

1 17. The method of claim 16, wherein said collecting data about a plurality of
2 computers within the network further comprises:

3 collecting a plurality of statistical measures which characterize each of the plurality
4 of computers,

5 and wherein said selecting the selected computer based on the collected data
6 further comprises:

7 assigning a weighted score to each statistical measure for each of the plurality of
8 computers;

9 combining the weighted scores to obtain a rank for each of the plurality of
10 computers;

11 ranking the plurality of computers according to the resulting ranks; and

12 selecting the at least one computer based on the content data, the current
13 connectivity status and the ranks.

1 18. The method of claim 13, further comprising:

2 storing a portion of the content data which identifies a type of file available for
3 searching on the plurality of computers; and

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4 selecting the selected computer based at least in part on the stored file-type content
5 data.

1 19. The method of claim 1, wherein said selecting at least one computer to be a
2 selected computer further comprises:

3 selecting at least a second selected computer based on the data,
4 and wherein said routing a search query from a user to the selected computer
5 further comprises:

6 routing a search query from the user to the second selected computer after a
7 predetermined period of time, or in response to a user request.

1 20. The method of claim 2, wherein said sending a signal to at least one of the plurality
2 of computers further comprises:

3 sending the signal from a plurality of geographical locations which are remote
4 from one another, wherein the geographical locations are selected based on their
5 respective proximity to a plurality of users.

1 21. The method of claim 1, wherein said collecting data about a plurality of computers
2 within the network is performed periodically, so that the collected data is approximately
3 current.

1 22. The method of claim 1, wherein said collecting data about a plurality of computers
2 within the network further comprises:

3 collecting data about a predetermined number of the plurality of computers at a
4 first predetermined time interval;

5 ranking the computers based on the collected data;

6 retaining a set of hub computers which make up a predetermined percentage of the
7 most highly-ranked computers; and

8 collecting data about only the set of hub computers at a second predetermined time
9 interval which is smaller than the first predetermined time interval.

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- 1 23. A system by which a user may establish an optimal connection to a peer-to-peer
2 computer network, comprising:
3 a monitor which measures data about a plurality of computers within the network;
4 and
5 a selector which selects at least one computer to be a selected computer, based on
6 the measured data, and which outputs a network location of the selected computer to the
7 user, to thereby allow the user to connect to the selected computer.
- 1 24. The system of claim 23, wherein said monitor further comprises:
2 a profiler which collects the measured data by sending a signal to at least one of
3 the plurality of computers and receiving the signal therefrom, to thereby form a profile of
4 the at least one of the plurality of computers; and
5 a database which stores the collected data.
- 1 25. The system of claim 24, wherein the profile comprises a round trip time taken by
2 the signal during its travel to and from the at least one computer.
- 1 26. The system of claim 24, wherein the profile comprises information on the number
2 of files contained within the at least one computer.
- 1 27. The system of claim 24, wherein the profile comprises information on the amount
2 of content available to the network on the at least one computer.
- 1 28. The system of claim 24, wherein the profile comprises information on the
2 capability of the at least one computer to process a search query.
- 1 29. The system of claim 24, wherein the profile comprises information on the number
2 of connected computers encountered by the signal during its travel to and from the at least
3 one computer.
- 1 30. The system of claim 24, wherein the profile comprises information on the number
2 of additional computers connected to the at least one computer.

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1 31. The system of claim 24, wherein the profile comprises information on a frequency
2 with which the at least one computer is connected to the network.

1 32. The system of claim 24, wherein the profile comprises information on which of the
2 plurality of computers are currently connected to the network.

1 33. The system of claim 23, wherein the monitor is a computer within the network, and
2 further wherein at least a portion of the measured data is collected by monitoring data
3 exchanges which travel through the monitor as they are transmitted through the network.

1 34. The system of claim 23, further comprising:
2 a memory which is a computer within the network, and which collects content data
3 comprising information on the content available for searching on the plurality of
4 computers by monitoring data exchanges which travel through the memory as they are
5 transmitted through the network.

1 35. The system of claim 34, wherein the memory removes the content data after a
2 predetermined period of time,
3 and further wherein the memory sends common user search queries into the
4 network on a periodic basis and stores the results.

1 36. The system of claim 35, wherein a portion of the removed content data which
2 identifies a type of file available for searching on the plurality of computers is separately
3 stored,
4 and further wherein the selector selects the selected computer based at least in part
5 on the stored file-type content data.

1 37. The system of claim 34, wherein the memory chooses a portion of the content data
2 to store based on previous user requests.

1 38. The system of claim 34, wherein the monitor monitors a current connectivity status
2 of each of the plurality of computers,

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3 and further wherein the selector selects the selected computer based on the content
4 data and the current connectivity status.

1 39. The system of claim 34, wherein the monitor collects a plurality of statistical
2 measures which characterize each of the plurality of computers,

3 and further wherein the selector assigns a weighted score to each of the statistical
4 measures and combines the weighted scores to thereby rank the plurality of computers
5 accordingly, and thereafter selects the at least one computer based on the content data, the
6 current connectivity status and the ranks.

1 40. The system of claim 23, wherein the selector selects at least a second selected
2 computer based on the data, and further wherein the selector outputs a network location of
3 the second selected computer to the user after a predetermined period of time, or in
4 response to a user request.

1 41. The system of claim 24, wherein the profilers are located at a plurality of
2 geographical locations which are remote from one another, wherein the geographical
3 locations are selected based on their respective proximity to a plurality of users.

1 42. The system of claim 23, wherein the monitor and selector are located on a user
2 computer.

1 43. The system of claim 34, wherein the memory is located on a user computer.

1 44. The system of claim 23, wherein the host monitor collects data about a
2 predetermined number of the plurality of computers at a first predetermined time interval,
3 and the host selector ranks the computers accordingly, and further wherein the host
4 monitor retains a set of hub computers which make up a predetermined percentage of the
5 most highly-ranked computers, and thereafter collects data about only the set of hub
6 computers at a second predetermined time interval which is smaller than the first
7 predetermined time interval.

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1 45. A computer program product for enabling a processor in a computer system to
2 implement a system for optimally connecting to a peer-to-peer computer network, said
3 computer program product comprising:

4 a computer usable medium having computer readable program code means
5 embodied in said medium for causing a program to execute on the computer system, said
6 computer readable program code means comprising:

7 means for collecting data about a plurality of computers within the network,
8 including a network location of each of the plurality of computers;

9 means for selecting at least one computer to be a selected computer, based on the
10 collected data; and

11 means for routing search queries from a user to the selected computer.

1 46. The computer program product of claim 45, wherein said means for collecting data
2 about a plurality of computers within the network further comprises:

3 means for sending a signal to at least one of the plurality of computers;

4 means for receiving the signal upon its return from the at least one computer; and

5 means for forming a profile characterizing the at least one computer, based on
6 information provided by the signal.

1 47. The computer program product of claim 45, wherein said means for collecting data
2 about a plurality of computers within the network further comprises:

3 means for collecting a plurality of statistical measures which characterize each of
4 the plurality of computers,

5 and wherein said means for selecting the selected computer based on the collected
6 data further comprises:

7 means for assigning a weighted score to each statistical measure for each of the
8 plurality of computers;

9 means for combining the weighted scores to obtain a rank for each of the plurality
10 of computers; and

11 means for ranking the plurality of computers according to the resulting ranks.

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1 48. The computer program product of claim 45, wherein said means for collecting data
2 about a plurality of computers within the network further comprises:
3 means for monitoring data exchanges which occur between the plurality of
4 computers.

1 49. The computer program product of claim 48, further comprising:
2 means for storing the collected data in a memory, wherein at least a portion of the
3 collected data is content data which comprises information on the content available for
4 searching on the plurality of computers.

1 50. The computer program product of claim 49, further comprising:
2 means for removing the content data after a predetermined period of time;
3 means for sending common user search queries into the network on a periodic
4 basis; and
5 means for storing the results in the memory.

1 51. The computer program product of claim 49, wherein said means for storing the
2 content data in a memory comprises:
3 means for choosing a portion of the content data to store based on previous user
4 requests.

1 52. The computer program product of claim 49, wherein said means for collecting data
2 about a plurality of computers within the network further comprises:
3 means for monitoring a current connectivity status of each of the plurality of
4 computers,
5 and wherein said means for selecting at least one computer to be a selected
6 computer based on the collected data further comprises:
7 means for selecting the selected computer based on the content data and the current
8 connectivity status.

1 53. The computer program product of claim 45, wherein said means for collecting data
2 about a plurality of computers within the network further comprises:

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3 means for collecting a plurality of statistical measures which characterize each of
4 the plurality of computers,

5 and wherein said means for selecting the selected computer based on the collected
6 data further comprises:

7 means for assigning a weighted score to each statistical measure for each of the
8 plurality of computers;

9 means for combining the weighted scores to obtain a rank for each of the plurality
10 of computers;

11 means for ranking the plurality of computers according to the resulting ranks; and

12 means for selecting the at least one computer based on the content data, the current
13 connectivity status and the ranks.

1 54. The computer program product of claim 45, further comprising a plurality of
2 means for sending the signal from a plurality of geographical locations which are remote
3 from one another, wherein the geographical locations are selected based on their
4 respective proximity to a plurality of users.

1 55. A method for optimizing a computer's access to information, the method
2 comprising:

3 maintaining a first database which includes status information about computers
4 within the network;

5 maintaining a second database which includes content information about the
6 computers within the network;

7 filtering the contents of the second database using the contents of the first database,
8 at a time of a user request for information; and

9 accessing at least one computer within the network based on the filtered contents
10 of the second database.

1 56. The method of claim 55, wherein said maintaining a first database which includes
2 status information about computers within the network further comprises:

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3 updating the status information periodically, so that the status information is
4 approximately current in time.

1 57. The method of claim 55, wherein said maintaining a second database which
2 includes content information about the computers within the network further comprises:
3 intercepting exchanges between the computers within the network.

1 58. The method of claim 55, wherein said filtering the contents of the second database
2 using the contents of the first database further comprises:

3 identifying computers in the network which are least likely to provide information
4 desired by the user, based on the status information;

5 removing the content information from the second database which is stored on the
6 identified computers.

1 59. The method of claim 58, wherein the status information includes a frequency with
2 which the computers within the network are connected to the network.

1 60. The method of claim 58, wherein the status information includes a current
2 connectivity status of the computers within the network.

1 61. The method of claim 57, wherein the status information includes a download
2 capability of the computers within the network.

1 62. The method of claim 55, further comprising:
2 maintaining a third database which includes content information about the
3 computers within the network which identifies the types of files available for searching on
4 the computers within the network;

5 filtering the contents of the third database using the contents of the first database,
6 at a time of a user request for information; and

7 accessing at least one computer within the network based on the filtered contents
8 of the third database.

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